

PLANNING BENCHMARK**Purpose of Planning Benchmark**

The purpose of the planning benchmark is to provide a baseline that the alternatives (including the No-Project) are compared against. The benchmark does not represent the no-project or no-action condition but closely represents existing conditions at the start of the CALFED process. Comparison of the alternatives with the benchmark provides a relative measure of success of an alternative. It also provides a measure of the potential impacts of an alternative. The benchmark should provide a description of appropriate conditions that each resource discipline can use in the evaluation of alternatives.

Introduction

This technical memorandum describes the benchmark Bay-Delta system conditions that will be used for comparison and refinement of alternatives during Phase 1 of the CALFED Bay-Delta Program. The benchmark is not a "no-action" or "no-project" alternative as these terms are used under the National Environmental Policy Act (NEPA), and the California Environmental Quality Act (CEQA). However, many of the assumptions used to define the benchmark may be the same as those used to develop the no-action and no-project alternatives for subsequent phases of the Bay-Delta Program.

Benchmark

The benchmark is based on conditions as of December 15, 1994, upon the execution of the Bay-Delta Accord. For convenience, the benchmark can be considered to consist of four baseline sets of conditions: institutional; physical; water supply; and environmental.

Institutional

Major assumptions defining the institutional baseline include:

- The December 15, 1994 Bay/Delta Accord as implemented by State Water Resources Control Board (SWRCB) Decision 95-06 and the Water Quality Control Plan for the San Francisco Bay and Sacramento/San Joaquin River delta Estuary (May 1995), the US Fish and Wildlife Service biological opinion for Delta smelt, the National Marine Fisheries Service biological opinion for winter run salmon, and current Ops Group rules;
- Water rights, water rights decisions, and water service contracts as of December 15, 1994;
- The urban conservation memorandum of understanding;
- Corps of Engineers permits for existing pumping;

- Flood control criteria at reservoirs.

Physical

Major assumptions defining the physical baseline include:

- Physical configuration of the Delta levees, infrastructure, islands and channels as of December 15, 1994;
- State, federal and local water facilities hydrologically connected to the Bay-Delta watershed as of December 15, 1994;
- State, federal and local water facilities physically under construction or covered by a certified EIR or final Record of Decision as of December 15, 1994 (e.g. Eastside Reservoir, Los Vaqueros Project, and Coastal Aqueduct).
- Hydrologic conditions in the watersheds tributary to the Delta reflective of the "1995 level of development".

Supply

Major assumptions defining the supply baseline include:

- State Water Project (SWP) and Central Valley Project (CVP) operations to meet contractual obligations or historic deliveries (defined below) that existed on December 15, 1994 under the limitations of the assumed institutional and physical baselines;
- Water supply diversions for water rights holders at the December 15, 1994 level of demand under the institutional and physical baselines (this includes all projects other than the SWP and CVP).

Environmental

Major assumptions defining the environmental baseline include:

- Habitat conditions as they existed on December 15, 1994, plus
 - Habitat improvement projects physically under construction or covered by a certified EIR or Record of Decision as of December 15, 1994.
- Instream flow and diversion patterns resulting from the institutional, physical and supply baselines;
- Water temperature requirements;

Implications

There are a number of potential controversial implications of the assumptions listed above. Major issues include:

- Selection of 1995 Timeframe - Alternative plans will be based on current water user demands. Consequently, plans will not be developed in recognition of currently unused water rights and contractual entitlements, or in anticipation of future demand increases.

- Exclusion of Planned Facilities - Physical facilities planned, but not currently under construction or lacking a certified environmental document, are not included in the benchmark. Therefore, alternative plans will be developed without recognition of their effects on these future projects.
- December 15, 1994 Accord - Alternative plans will be developed based on operations defined by the Accord as currently implemented. The Accord and its implementation are currently being challenged in various forums.
- Central Valley Project Improvement Act - The benchmark only assumes implementation of the water management provisions associated with dedicated water.
- Urban Water Conservation MOU - The validity of the assumptions of this document have been under scrutiny because of the aggressive overall conservation assumptions.

Baseline Descriptions

This section presents information and data describing the four baseline sets consistent with the assumptions listed above.

Institutional

The institutional elements of the Accord include previous water rights decisions and modifications to portions of those decisions. This description of the institutional conditions reflects the regulations and agreements, including a general background, chronology and legal basis for each. These constitute the major elements defining the institutional baseline.

Water Rights Decision 1485 (D-1485).

In 1978, the SWRCB issued Water Rights Decision 1485 (D-1485), in an exercise of its reserved right to establish or revise terms and conditions for salinity control and for protection of fish and wildlife. D-1485 amended terms and conditions for the permits of DWR and Reclamation, and also adopted a water quality control plan (Delta Plan) containing water quality standards for the protection of beneficial uses of the waters of the Sacramento-San Joaquin Delta and Suisun Marsh.

The Board therefore adopted two documents simultaneously - a water quality control plan and a water right decision. Due to the uncertainty regarding future conditions, D-1485 called for the Board to continue to retain the right to revise permit conditions for the protection of fish and wildlife, salinity control, and the coordination of SWP and CVP permits. It also requires permittees to maintain water quality conditions in the channels of the Delta and Suisun Marsh, at specified locations, and during specific periods of different water year types, for the following fish and wildlife beneficial uses:

- Striped bass spawning (Electrical Conductivity (EC); and Delta Outflow);
- Striped bass survival (Delta Outflow);
- Salmon migrations (Computed stream flow); and,
- Suisun Marsh protection (EC, Delta outflow).

D-1485 also includes operational constraints limiting SWP and CVP diversions in order to minimize the diversion of young striped bass from the Delta, and setting Delta cross channel gate closure conditions to minimize the diversion of young striped bass into the Central Delta, or to minimize the cross-Delta movement of salmon. Provisions were included to allow the Bureau of Reclamation and DWR to coordinate their operations so that such deficiencies could be made up later in the year using SWP facilities.

Suisun Marsh monitoring and planning and plan implementation also were required. Other studies and reporting also are stipulated for the purpose of advancing the knowledge base regarding Bay-Delta processes.

Water Rights Decision 1422 (D-1422).

D-1422 conditions Bureau of Reclamation appropriations of water from the Stanislaus River in Calaveras and Tuolumne Counties. It addresses the quantity of water diverted, beneficial uses of the water, and other operational provisions regarding New Melones Reservoir storage and releases.

D-1422 requires Reclamation to first meet existing water right holdings on the Stanislaus River. Then Reclamation must meet instream flow requirements on the Stanislaus River and water quality requirements on the San Joaquin River at Vernalis.

The water right holdings total about 654,000 af annually (later revised to about 600,000 af, under resolution 88-312) and there are about 74,500 af of riparian rights. Reclamation must allocate 98,000 af annually for instream flow, on a pattern specified by Department of Fish and Game. D-1422 acknowledged that the 98,000 acre-foot quantity may be revised at a later date upon further study.

D-1422 directs Reclamation to meet year-round salinity and dissolved oxygen standards (Attachment 1) by releasing conserved water up to 70,000 af, annually.

The December 15, 1994 Bay-Delta Accord

DWR and Reclamation have committed to meeting new fish and wildlife standards, including conditions required by the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) for compliance with the federal endangered species act (ESA). The December 15, 1994 Accord, and the subsequent Water Quality Control Plan of May 1995, represent this commitment. The Water Quality Control Plan of 1995 is an interpretation of the Accord that incorporates previous agreements which

were not superseded by the Accord. The purpose of the Accord is to "provide ecosystem protection for the Bay-Delta Estuary" by implementing a Bay-Delta protection plan agreed to by with representatives of the state and federal agencies, and urban, agricultural and environmental interests.

DWR and Reclamation requested changes in some of the permit terms and conditions imposed by D-1485 and D-1422 to conform with the new fish and wildlife standards for the Bay-Delta Estuary that are set forth in the Principles for Agreement. D-1485 water quality standards modifications include: Table II striped bass spawning conditions; Suisun Marsh salinity standards; and operational constraints (export rates and Delta Cross Channel gate operations). D-1422 was modified for the water quality standard set on the San Joaquin River at Vernalis, which affects the operations of New Melones Reservoir. The Accord also identified conditions under which DWR and Reclamation can use each other's Delta export facilities, with review by DFG, USFWS, NMFS and others and/or the CALFED Ops group.

The resulting SWRCB decision, Order 95-6 (Order Regarding Petition for Changes in Water Rights that Authorize Diversion and Use of Waters Affecting the San Francisco Bay/Sacramento-San Joaquin Delta Estuary), is an interim order that effectively expires upon adoption of a comprehensive water right decision that allocates final responsibilities for meeting the Bay-Delta objectives or on December 31, 1998, whichever comes first. Order 95-6 made the interim changes to D-1485 and D-1422 as indicated on Attachment 1. The previous water right decisions, along with these interim changes are included in the benchmark.

Formal Consultation with USFWS on the 1994 Operation of the Central Valley Project and State Water Project: Effects on Delta Smelt (Delta Smelt Opinion), 1993.

This opinion was written as part of a formal consultation requested by Reclamation on proposed operations of CVP and SWP. In the opinion of USFWS, the proposed 1994 combined CVP and SWP operations in the Delta would have adversely affected Delta smelt habitat. USFWS provided a reasonable and prudent alternative to the proposed operations, which includes pulse flow requirements on the San Joaquin River at Vernalis (April 15-May 15) and Delta outflow requirements.

A reasonable and prudent alternative for the Delta Smelt Opinion (December 14, 1993) was developed (Attachment 2). This alternative has been superseded by the Accord.

Biological Opinion by NMFS for the Operation of the Federal Central Valley Project and the California State Water Project (Winter-run Opinion), 1993.

The Biological Opinion for the Operation of the Federal Central Valley Project and the California State Water Project (Winter-run Opinion) reviewed the divisions, operational agreements, constraints, and objectives of the CVP. Particular attention was given to

the proposed operations of the Trinity River Division, Shasta Division, Sacramento River Division, and the potential impacts of those operations on the winter-run chinook salmon. The opinion concluded (February 12, 1993; pg. 49) that:

"Based on an assessment of the impacts, NMFS concludes the proposed long-term operation of the CVP by the Bureau is likely to jeopardize the continued existence of Sacramento River winter-run chinook salmon.

The proposed long-term operation of the CVP will substantially impact winter-run chinook salmon throughout the Sacramento River system. Losses of winter-run chinook salmon are anticipated to result from exposure to lethal temperatures in the upper Sacramento River, stranding of juvenile fish from changes in streamflow, dewatering of redds from changes in streamflow, blockage and delay of adult upstream migrates at the Red Bluff Diversion Dam, predation of juveniles at the Red Bluff Diversion Dam, diversion of juveniles at the Delta Cross Channel, creation of reverse flow conditions by pumping plants in the south Delta, and losses associated with the Delta fish collection facilities."

NMFS provided a reasonable and prudent alternative, consistent with the federal ESA, and concluded that "If the Bureau implements this reasonable and prudent alternative, NMFS has concluded that the long-term operation of the Central Valley Project is not likely to jeopardize the continued existence of winter-run chinook salmon." Thirteen terms and conditions comprise the reasonable and prudent alternative, as shown in Attachment 3. Elements of this opinion, such as QWEST were superseded by other measures, but the temperature control measures at Lake Shasta (carryover storage) and the Delta Cross Channel gate closures are included in the benchmark.

Water Rights and Water Service Contracts as of December 15, 1994.

Following is a list of water service contracts and water rights settlement contracts for the SWP and CVP. Local projects and riparian rights are approximated. These amounts and contracts are included in the CALFED benchmark.

State Water Project:

Feather River Area	39,800
North Bay Area	67,000
South Bay Area	188,000
San Joaquin Valley Area	1,355,000
Central Coastal Area	70,486
<u>Southern California Area</u>	<u>2,497,500</u>
Total	4,217,786

(source: DWR, 1989; SWP Data Handbook)

Central Valley Project (service contracts + water rights settlement contracts):

Sacramento River	2,772,163
American River	729,750
Delta Division	1,943,495
West San Joaquin Division	1,122,500
San Felipe Division	196,300
<u>Friant Diversions</u>	<u>1,720,000¹</u>
Total	8,484,208*

(source: Reclamation, 1992; CVP-OCAP)

¹(source: estimate of existing diversions, F-K and Madera canals)*Other Projects and Diversions*

Sacramento River Region	3,169,000
San Francisco Bay Region (Mokelumne)	244,000
San Francisco Bay Region (Hetch Hetchy)	269,000
<u>San Joaquin River Region</u>	<u>3,015,000</u>
Total	6,697,000*

(source: DWR, Bulletin 160-93; estimated for current level of development)

In Delta Diversions

<u>Delta riparian diversions</u>	<u>1,500,000</u>
Total	1,500,000

(source: CVP, OCAP, p. 58)

Memorandum of Understanding Regarding Urban Water Conservation in California. September, 1991.

The water conservation MOU describes actions (best management practices) that signatory agencies would follow to conserve water. The MOU includes a list identifying practices that the agencies believe meet the definition of a BMP. The MOU also calls for a good faith effort to implement the measures based on a BMP implementation schedule.

Other Issues

Public Law 102-575, the Central Valley Project Improvement Act of 1992 (CVPIA), influences the benchmark. The act covers five primary areas: limitations on new and renewed CVP contracts, water conservation and other water management actions, water transfers, fish and wildlife restoration actions, and establishment of an environmental restoration fund. The CVPIA calls for dedication of 800,000 af annually of CVP project yield for the purposes of protecting and enhancing fish and wildlife habitat. The programmatic being prepared for the CVPIA is evaluating potential sources of the 800,000 af and is determining its application. This work is not complete at this time.

Wherever possible, the baseline for the CALFED analysis will be coordinated with, and will match, the baseline for the CVPIA PEIS analysis. However, the Benchmark date for CVPIA analysis is October 30, 1992 and for CALFED the date is December 15, 1994; the assumptions will be adjusted accordingly.

The CVPIA includes habitat restoration measures in addition to the water management measures associated with the 800,000 af of project yield dedicated to fish and wildlife. These habitat measures are being studied under the CVPIA and the final funding or implementation is unknown. One of the core actions of the CALFED action alternatives, may be to specify and fund projects for CVPIA compliance. Therefore, the CALFED benchmark will not include CVPIA restoration actions but these actions should be included in the CALFED alternatives.

The PEIS Alternative 1 is attempting to include the water management practices associated with dedicated water. These practices include instream flow standards on the Sacramento, American, and San Joaquin Rivers, and Clear Creek. These water management activities of CVPIA are included in the benchmark.

Summary.

The institutional criteria for the benchmark include the controlling standards contained in D-1485 and D-1422 that remain in effect, and the aspects of D-1485 and D-1422 that were updated in the Accord (Attachment 1). It is assumed that local agencies will implement BMPs and achieve a level of conservation consistent with the water conservation MOU.

Water deliveries assumed in the benchmark reflect the 1995 level of development in the CVP and SWP watersheds. This level of development is constrained by the maximum of historic deliveries or water rights, and is less than that corresponding to full contract and water right entitlements.

Delta outflow conditions are defined by the Delta outflow requirements contained in the Delta smelt opinion, the X2 criteria, export limitation ratios, and DCC gate closures.

Physical

Physical conditions specified in this benchmark are assumed as they (1) historically existed when the 15 December, 1994 Accord became effective, (2) as they were specified as part of that Accord, and/or (3) as they were physically under construction or covered by a certified EIR or final Record of Decision as of December 15, 1994. The benchmark descriptions identify the facilities, physical conditions (e.g., storage and conveyance capacities), and operating conditions (e.g., deliveries) dictated by environmental, water supply and other factors. Figure 1 shows the major water project facilities in California.

Delta Islands and Channels

- The closest available approximation to a physical description of Delta islands and channels as of December 15, 1994 is the Department of Water Resources Bay-Delta geometry data base used as an input file to runs of its most current numerical model, DWRDSM2, excluding any modifications made as a result of changes that have occurred since 1994.

Permits

All applicable permits that describe pumping limits, channel maintenance, or flood control measures that existed on December 15, 1994 are included in the benchmark. The export from the Banks Pumping Plant is governed by a permit through the Corps of Engineers that limits the maximum diversion to less than existing plant capacity.

Facilities

The Bay-Delta Watershed is defined for the benchmark as the lands from which runoff would flow to the Delta.

In-Delta Facilities

- North Bay Aqueduct-- In operation to meet service area demands (27,000 af/yr, Bulletin 160-93)
- Delta Cross Channel-- Design capacity 3500 cfs. Operation calls for the closure schedule specified in SWRCB order 95-6 (based on the Accord). Specifically, closure from February 1-May 20, closed during half of the period May 20 - June 15, and closed for 45 days maximum during November to January. The DCC is also closed during flood conditions.
- South Delta Barriers- Temporary barrier placed at head of Old River during April-May (coordinated with the San Joaquin pulse flows as specified in Accord).
- Montezuma Slough Suisun Marsh Salinity Control Structure- Operated from October 1 through May 31 such that gates are opened and closed twice each tidal cycle in order to divert less saline water (during ebb tides) from the Sacramento River into Montezuma Slough and to prevent (during flood tides) higher salinity water from Grizzly Bay from entering the western end of the Slough. During operation, the net flow through the structure is about 1,800 cfs when averaged over one tidal day.
- Banks Delta Pumping Plant- The capacity is 10,300 cfs but for the benchmark period is assumed to operate at 6,680 cfs (or up to 7,300 cfs if San Joaquin inflow exceeds 1,000 cfs) to fulfill contracts and fill San Luis Reservoir in compliance with Corps Permit; subject to the export restrictions specified in SWRCB 1995 Water Quality Control Plan.

- Tracy Pumping Plant-- 4,600 cfs capacity (or 4200 cfs during winter because of canal constraints downstream) to fulfill contracts; subject to export restrictions specified in SWRCB 1995 Water Quality Control Plan.
- Contra Costa Canal-- Operating up to 350 cfs capacity to meet annual delivery of 140 taf/yr at the assumed 1995 level of development.
- Old River Intake to Los Vaqueros Reservoir (under construction)--Pumping 200 cfs to fill Los Vaqueros Reservoir. Reservoir capacity is 100,000 af.
- South Bay Aqueduct - Operated to deliver water from Bethany Reservoir, located southwest of Clifton Court Forebay, to urban and agricultural areas in Santa Clara and Livermore-Amador Valleys. Includes regulating reservoir, Del Valle Reservoir which has a storage capacity of 77,000 acre feet.
- Mokelumne Aqueducts - Three barrel steel pipeline owned and operated by EBMUD that extends 82 miles from Pardee Tunnel across the Sacramento- San Joaquin Delta to the east portal of the Lafayette Aqueducts.
- Hetch-Hetchy Aqueduct.

Major Reservoirs in Bay Delta Watershed

- Significant reservoirs within the Bay-Delta watershed and service areas (defined as those exceeding 100,000 acre feet in storage capacity) are listed in Table 1, along with the owners and the reservoir capacities.

Federal Facilities in Bay Delta Watershed

- Spring Creek Tunnel--Receives releases from Whiskeytown Lake on Clear Creek to Spring Creek PP. PP discharges to Keswick Reservoir on Sacramento River.
- Spring Creek Reservoir--Stores 5,800 ac ft for releases to dilute mine drainage from Iron Mtn Mine
- Whiskeytown Conduit--Receives annual Ag and M&I water supply releases of up to 15,000 ac ft from Whiskeytown Lake
- Bella Vista Conduit--Provides up to 23,000 ac ft of water annually for agricultural and municipal and industrial use east of Redding
- Keswick Dam/Reservoir--23,000 ac ft afterbay for Shasta Dam and Spring Creek power releases from Whiskeytown Lake. Release requirements to Sacramento River must conform to NMFS winter run opinion that requires from October 1 through March 31, minimum flow of 3250 cfs, and from July 1 through March 31, limitations on the rate at which changes in flow releases can be made.
- Lake Shasta temperature control device.
- Red Bluff Diversion Dam--Gated weir structure on Sac R. Diverts to the Corning and Tehama-Colusa Canal; NMFS winter run opinion requires gates to be raised from September 15 through at least May 14.
- Tehama-Colusa Canal--Canal itself holds 2,530 ac ft and supplies over 280,000 ac ft annually for water supply

Table 1
Major surface water reservoirs¹
included in the benchmark

Reservoir	Year Complete	Owner	Area (acres)	Capacity (acre-feet)
Trinity River Basin Region				
Clair Engle (Trinity)	1962	USBR	16,400	2,448,000
Sacramento Valley Region				
Almanor	1927	PGE	28,260	442,000
Bucks	1928	PGE	1,830	103,000
Shasta	1945	USBR	29,500	4,552,000
Folsom	1956	USBR	11,450	1,010,000
Berryessa (Monticello)	1957	USBR	20,700	1,602,000
Camp Far West	1963	SSWD	2,680	103,000
Black Butte	1963	USCE	4,560	160,000
Whiskeytown	1963	USBR	3,200	241,000
Union Valley	1963	SMUD	2,860	271,000
French Meadows	1965	PCWA	1,420	134,000
Hell Hole	1966	PCWA	1,250	208,000
Oroville	1968	DWR	15,800	3,538,000
New Bullards Bar	1970	YWCA	4,810	970,000
Indian Valley	1976	YCFCWCD	4,000	300,000
Los Vaqueros	----	CCWD		100,000
San Joaquin River Basin Region				
Hetch Hetchy	1923	SF	1,960	380,000
Shaver	1927	SCE	2,180	135,000
Pardee	1929	EMBUD	2,130	210,000
Salt Springs	1931	PGE	920	139,000
Millerton (Friant)	1947	USBR	4,900	520,000
Edison	1954	SCE	1,890	125,000
Lloyd (Cherry Valley)	1955	SF	1,760	268,000
Mammoth Pool	1960	SCE	1,100	123,000
New Hogan	1963	USCE	4,410	325,000
Camanche	1963	EBMUD	7,700	431,000
New Exchequer (McClure)	1967	MID	7,130	1,026,000
San Luis	1967	DWR-USBR	12,700	2,039,000
New Don Pedro	1971	TID-MID	12,960	2,030,000
Buchanan	1979	USCE	1,780	150,000
New Melones	1979	USCE	12,500	2,400,000
Tulare Basin Region				
Isabella	1953	USCE	11,400	570,000
Pine Flat	1954	USCE	5,970	1,000,000
Courtright	1958	PGE	1,480	123,000
Wishon	1958	PGE	1,000	128,000
Kaweah (Terminous)	1962	USCE	1,940	150,000
North Coast Region				
Clear Lake (Modoc County)	1910	USBR	24,800	388,000
Mendocino (Coyote Valley)	1959	USCE	1,960	130,000
Sonoma (Warm Springs)	1984	USCE	3,600	381,000

Table 1
Major surface water reservoirs¹
included in the benchmark

Reservoir	Year Complete	Owner	Area (acres)	Capacity (acre-feet)
Southern California Area				
El Capitan	1934	SD	1,580	113,000
Matthews	1938	MWD	2,750	182,000
Crowley	1941	LADWP	5,280	184,000
Casitas	1959	USBR	2,720	254,000
Perris	1973	DWR	2,320	131,000
Pyramid	1973	DWR	1,380	171,000
Castaic	1973	DWR	2,240	324,000
Eastside	-----	MWD		

1- Reservoirs with capacities exceeding 100,000 acre-feet.

Reservoir Owners:

DWR: California Department of Water Resources
 EBMUD: East Bay Municipal Utility District
 LADWP: Los Angeles Department of Water and Power
 MCWA: Monterey County Water Agency
 MID: Merced Irrigation District
 MWD: Metropolitan Water District of Southern California
 PCWA: Placer County Water Agency
 PGE: Pacific Gas and Electric Company
 SCE: Southern California Edison Company
 SD: City of San Diego
 SF: City and County of San Francisco
 SMUD: Sacramento Municipal Utility District
 SSWD: South Sutter Water District
 TID-MID: Turlock Irrigation District and Modesto Irrigation District
 USCE: U.S. Army Corps of Engineers
 USBR: U.S. Bureau of Reclamation
 YCFCWCD: Yolo County Flood Control and Water Conservation District
 YCWA: Yuba County Water Agency
 CCWD: Contra Costa Water District

- Corning Canal & Pumping Plant - diverts water from the Tehama-Colusa Canal about 1/2 mile downstream of Red Bluff Diversion Dam. Contracts serviced by the canal total 43.8 taf/yr.
- Nimbus Dam/Lake Natoma - located approximately 7 miles downstream of Folsom Dam on American River.
- Folsom South Canal - originates at Lake Natoma; currently 26.7 miles in length; Contracts total 200 taf/yr, but deliveries are significantly less.
- Sugar Pine Dam/Reservoir - Capacity 6950 acre feet.
- Delta Mendota Canal - conveys CVP water from Tracy Pumping Plant 117 miles to Mendota Pool on San Joaquin River about 30 miles west of Fresno. Capacity of 4600

cfs between pumping plant and upstream of O'Neill Forebay; 4200 cfs to O'Neill forebay, and 3200 cfs from O'Neill Forebay to Mendota Pool.

- San Luis Dam and Reservoir - Capacity 2,041,000 acre feet, operated as joint federal/state facility to primarily store water exported from Sacramento-San Joaquin Delta.
- O'Neill Dam/Forebay - Joint federal/state facility located about 1.5 miles downstream of San Luis Dam which serves as junction point between San Luis Reservoir and Delta Mendota Canal and California Aqueduct. Capacity is 56,000 acre feet
- San Luis Canal - Joint federal/state project that extends 102 miles from O'Neill Forebay along west side of San Joaquin Valley. Conveyance capacity up to 13,100 cfs.
- Coalinga Canal - Transports water from the San Luis Canal to the Coalinga area, where it serves Southern San Joaquin River Basin Region.
- Sly Park Dam/Jenkinson Lake - Storage capacity 41,000 acre feet. Located in the Cosumnes River Watershed.
- Camino Conduit - Originates at Sly Park Dam and extends approximately 7 miles west to Camino.
- Buchanan Dam/Eastman Lake - Located on Chowchilla River about 15 miles northeast of City of Chowchilla. Reservoir storage capacity is about 150,000 acre-ft.
- New Melones Dam and Reservoir - Located on Stanislaus River about 60 miles upstream of confluence with San Joaquin River. Storage capacity is 2,400,000 acre-feet. Two CVP contracts for direct diversion of New Melones total 155,000 acre feet per year.
- Hidden Dam and Reservoir - Located on Fresno River about 15 miles northeast of City of Madera. Reservoir capacity is 90,000 acre feet with 65,000 reserved for flood control. Provides approximately 23,800 acre feet of irrigation water annually.
- Farmington Canal - Conveys water 9.6 miles from Stanislaus River at Goodwin Dam to irrigation areas.
- Friant Dam/Millerton Reservoir - Located on San Joaquin River east of Fresno. Reservoir capacity is 520,000 acre feet. Provides flood control and irrigation supplies to CVP contractors along Madera and Friant-Kern Canal.
- Madera Canal - Extends north from Friant Dam 37 miles to Ash Slough; on average about 320,000 acre feet per are delivered.
- Friant-Kern Canal - Extends south from Friant Dam 153 miles to Kern County near Bakersfield. Average annual water delivery is about 1.4 million acre feet.

State Facilities in Bay-Delta Watershed

- Oroville Dam/Reservoir - Key features of the SWP, located on Feather River, the storage capacity of Lake Oroville is 4.3 million acre feet. Major function is to conserve and regulate flows of Feather River for subsequent release to the Sacramento San Joaquin Delta.

- Thermalito Diversion Dam/Reservoir - Storage capacity of 16,529 acre feet; diverts water from Lake Oroville to Thermalito Forebay for power generation.
- Thermalito Afterbay - Receives releases from Thermalito Forebay and Powerplant, regulating the return of flow to the Feather River. Storage capacity of 70,926 acre feet.
- California Aqueduct - Key feature of the SWP. California Aqueduct begins at Banks Pumping Plant and extends 444 miles south to Lake Parris south of Riverside, in southern California. Conveyance Capacity of 10,000 cfs.

Local Facilities

- New Bullards Bar Dam/Reservoir - Located on Yuba River, capacity is 970,000 acre feet.
- Pardee/Camanche Reservoirs - Located on Mokelumne River, Pardee Reservoir has a capacity of 210,000 acre feet and is the diversion point for the Mokelumne Aqueduct. Camanche reservoir, located 10 miles downstream of Pardee, provides flow control and downstream releases for other water rights holders.
- Tri-Dam Project - includes Donnels Dam and Reservoir, Beardsley Dam and Reservoir, and Tulloch Dam and Reservoir on Stanislaus River and Middle Fork Stanislaus River.
- New Don Pedro Reservoir - Located on Toulomne River downstream of Hetch Hetchy. Capacity if 2,030,000 acre feet.
- New Exchequer Reservoir (McClure) - Located on Merced River; capacity is 1,025,000 acre feet.
- Los Vaqueros Reservoir - Under construction by Contra Costa Water District. Located on Kellogg Creek, west of the Delta.
- Eastside Reservoir - Under construction by MWD.

Water Supply

The benchmark will use water supply levels quantities on the 1995 level of development. The 1995 level of development is a modeling benchmark used by DWR and Reclamation to specify hydrologic and water use conditions, assuming land use and population projected for 1995. This modeling benchmark is not based on the actual 1995 conditions but was developed in the early 1990's based on projected conditions (typically from Bulletin 160).

The benchmark assumes SWP and CVP operations to meet water use conditions as of December 15, 1994 under the institutional and physical baseline. The diversions for these projects will be the lesser of the contract amount or the maximum historic delivery as of December 15, 1994. Similarly, non-CVP and SWP water rights holders are assumed to take the lesser of the water right amount (if known, or interpreted by

settlement contract) and the maximum historic delivery as of December 15, 1995 (Table 2).

Coordinated Operating Agreement (COA).

In 1986, DWR and Reclamation signed an agreement to coordinate operations of both the CVP and SWP to meet Delta standards and goals as set forth in the COA document. Percentages were set for sharing the responsibility. Sacramento Valley inbasin use is to be met with storage withdrawals during balanced water conditions at a ratio of 75:25, and the allocation of unstored water for exports is set to a ratio of 55:45 for CVP and SWP respectively. Although the Delta standards and goals presented in the COA are superseded by the 1994 Accord, a provision in the agreement indicates that the COA was intended to be amended when new Delta standards are established by the SWRCB. Therefore, it is assumed that the COA is in effect for the purposes of the CALFED benchmark assumptions.

Central Valley Project Long-Term Operations Criteria and Plan (CVP-OCAP), 1992.

This Reclamation document was initiated through formal consultation with NMFS and USFWS pursuant to Section 7 of the Endangered Species Act. Long-term operating criteria and procedures for the Trinity, Shasta, and Delta Diversions and the Red Bluff Diversion Dam were in question. The document includes descriptions of facilities and operating environment of the CVP (excluding East Side and Friant diversions), and provides a base for environmental impact analysis of the system.

Environmental

The environmental benchmark includes those habitat and regulatory conditions that existed on December 15, 1994 and influence the environmental conditions in the Delta.

Habitat

Habitat conditions included in the benchmark represent the habitat that existed on December 1994. Habitat surveys, HEP analysis, IFIM studies, and special status species analyses that were completed by December define the habitat conditions. California Natural Diversity Data Base maps that describe species and habitat conditions dated before this date are also included in the baseline.

Habitat improvement projects physically under construction or covered by a certified EIR of Record of Decision as of December 15, 1994 are included.

Table 2
Benchmark Delta Water Supply Use
(thousands of acre-feet)

Summary by Region		by Project	
San Francisco Bay Region	1,182	SWP	2,710
Sacramento River Region	5,795 (or)	CVP	7,625
San Joaquin River Region	5,172	Other	7,245
West of San Joaquin Region	145	Total	17,580
South of San Joaquin Region	5,286		
Total	17,580		

Detailed Summary by Region

San Francisco Bay Region	1182
North Bay Aqueduct	27
Sonoma Petaluma Aqueducts	25
City of Vallejo	2
Putah South Canal	54
Carriage Water - SWP	61
Carriage Water - CVP	183
Mokelumne Aqueduct	244
Contra Costa Canal	73
South Bay Aqueduct	154
Hetch Hetchy	269
San Felipe Unit	90
Sacramento River Region	5,795
Local surface water development	3,169
CVP	2,382
other Federal water developments	239
SWP	5
San Joaquin River Region	5172
Local Surface water development	3,015
CVP	1,997
SWP	5
Other federal water development	155
West of San Joaquin Region	145
San Felipe Unit	145
South of San Joaquin Region	5,286
Friant Kern Canal	1,149
CMD Mendota Pool	130
San Luis Canal	1,549
California Aqueduct	2,458
Total	17,580

Source: Summarized from DWR Bulletin 160-93

Biological Opinions

The biological opinions for aquatic and terrestrial species in effect on December 15, 1994 are included in the benchmark, unless specifically noted. The winter-run chinook salmon and Delta smelt opinions mentioned above are the primary criteria influencing the Delta.

Instream Flow Standards

Instream flows under the benchmark reflect the regulatory conditions that existed in December 1994. The rivers and appropriate standards are listed below. The Delta standards were previously discussed under the description of the Accord.

The CVPIA PEIS is investigating a prescription for the 800,000 af of project yield dedicated to environmental uses by the Act, and the associated sources of water. That process may result in the AFRP flow standards or some variation. Alternative 1 of the PEIS reflects several aspects of the Act, included dedicated water and habitat provisions. It is anticipated that following the PEIS, dedicated water will be implemented and will influence instream flow conditions. Therefore the CALFED benchmark will include the water management options of the PEIS Alternative 1, including flow standards on the Sacramento, American and San Joaquin Rivers, and Clear Creek.]

Sacramento River. The AFRP has proposed a Keswick flow standard that is based on Lake Shasta storage. Currently, the river is operated to meet a flow-based standard. The PEIS is including the Keswick standard in its Alternative 1. Sacramento River standards contained in the benchmark include the criteria specified in the winter-run salmon biological opinion and flow standards at Keswick specified in the AFRP.

American River. Current American River standards are specified in D-893. Although an Auburn Dam has not been constructed, water rights for operation of a proposed Auburn Dam on the American River were conditioned by D-1400. D-1400 would have required higher instream flows than D-893. Reclamation voluntarily operates the CVP to meet D-1400 when water is available to do so and D-893 all other times. The AFRP proposes new American River standards that are based on water year type and exceed D-1400. The CVPIA PEIS Alternative 1 assumes a storage-based flow requirement that includes reoperation of the CVP. The Sacramento Water Forum has proposed instream flows similar to the American River flows assumed in the PEIS Alternative 1. These flows are somewhat lower than the full AFRP flows for the American River. The benchmark will include a storage-based criteria that attempts to match the AFRP recommendations and acknowledges Folsom Reservoir as part of the CVP.

Feather River. Currently, the SWP releases water from Lake Oroville to meet instream flow requirements varying from 1,000 cfs up to 1,700 cfs. Also included in these

requirements is the 1983 agreement with DFG to maintain flow from December to March at 2,500 cfs if it has exceeded this amount during the same period. These standards are included in the CALFED benchmark.

Stanislaus River. The flow and water quality conditions associated with D-1422 and modified by the accord, as previously described, are included in the benchmark.

San Joaquin River. San Joaquin River standards included in the benchmark include the pulse flows described in the accord and the Vernalis water quality standards in D-1422. *March*

Mokelumne River. Mokelumne River flow standards are under review by FERC for the relicensing of East Bay Municipal Utility District's (EBMUD) Lake Camanche licence. To settle FERC's review, EBMUD has offered to maintain these flows consistent with the Lower Mokelumne River management Plan. The CALFED benchmark assumes maintenance of the flows specified in EBMUD's settlement offer to FERC.

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Attachment 1

Attachment 1. Bay-Delta Accord (Order 95-6) Changes to Water Rights Decision-1485	
D-1485 Conditions (paraphrased)	Changes Made by Order 95-6 (paraphrased)
<p>Striped Bass Spawning</p> <ol style="list-style-type: none"> 1. Required average of mean daily EC at Prisoners Pt., in all water year types not to exceed 0.550 mmhos/cm from April 1 to May 5 2. Required average of mean daily EC at Antioch Waterworks intake (San Joaquin River), in all water year types not to exceed 1.5 mmhos/cm from April 15 to May 5. 3. Required Delta average outflow index at Chipps Island in all water year types to not be less than 6,700 cfs from April 1 to April 14. <p>Included a "Relaxation Provision" replacing requirements 1-3, above with progressively increasing EC levels (ranging from 1.5 to 25.2 mmhos/cm from April 1 to May 5 in all water year types) allowed in response to corresponding increases in deficiencies ranging from 0 to 4.0 million acre feet in "firm" supplies.</p> <p>Suisun Marsh</p> <p>Required that the maximum 28-day running average of mean daily EC be maintained at 12.5 mmhos/cm at Chipps Island at the O&A Ferry Landing as follows:</p> <ul style="list-style-type: none"> • from January through May in all water year types; • from October through December in wet, above normal, and below normal water year types; and • at 15.6 mmhos/cm at the same location from October through December in dry or critical water year types. (The 15.6 mmhos/cm EC standard applies only when project water users are taking deficiencies in scheduled water supplies, otherwise the 12.5 standard remains in effect) 	<p>San Joaquin River Salinity</p> <p>Required that San Joaquin River EC between the San Joaquin River at and between Jersey Point and Prisoners Point be maintained at a maximum 14-day mean daily running average of 0.44 mmhos/cm in April and May of wet, above normal, below normal, and dry water year types.</p> <p>Eastern Suisun Marsh Salinity</p> <p>Requires that maximum monthly average of both daily high tide EC values (mmhos/cm) - or better protection as measured at three eastern Suisun Marsh locations in all water year types not to exceed from 8.0 to 19.0 mmhos/cm, depending on the month. Allowable EC's and corresponding calendar months remain as matched in D-1485.</p> <p>Western Suisun Marsh Salinity</p> <p>Requires that maximum monthly average of both daily high tide EC values (mmhos/cm) - or better protection as measured at five western Suisun Marsh locations in all water year types not to exceed from 8.0 to 19.0 mmhos/cm, depending on the month..</p>

Requires average daily Delta outflow at Chipps Island in wet water year types to be not less than 10,000 cfs either from February through May (wet year) or from February through April (wet with subnormal snowmelt).

Requires minimum daily Delta outflow index for 60 consecutive days within the January to April period in above normal, below normal water year types to be maintained at 12,000 cfs.

Requires minimum daily Delta outflow index for each month to not be less than 6,600 cfs based on conditions related to storage conditions at Shasta, Oroville, and CVP storage on the American River.

Requires the average monthly EC at 8 sampling locations in the Delta in all water year types not to exceed from 8.0 to 19.0 mmhos/cm, depending on the month.

Attachment 1. Bay-Delta Accord (Order 95-6) Changes to Water Rights Decision-1485 (continued)

D-1485 Conditions (paraphrased)	Changes Made by Order 95-6 (paraphrased)
<p>Operational Constraints</p> <p>Required that mean monthly SWP diversions in all water year types not exceed 3,000 cfs (May and June) and 4,600 cfs (July) to minimize the diversion of young striped bass from the Delta.</p> <p>Required that mean monthly CVP diversions in all water year types not exceed 3,000 cfs (May and June) to minimize the diversion of young striped bass from the Delta.</p>	<p>Export Limits</p> <p>Sets the combined (SWP and CVP) export rate to a maximum 3-day running average in all water year types of either 1,500 cfs or 100% of 3-day running average of San Joaquin River flow at Vernalis, whichever is greater. This export restriction does not supersede the export restriction of 35% of Delta inflow (below). The more restrictive of these two objectives applies from April 15 to May 15.</p> <p>Sets the maximum percent of Delta inflow diverted in all water year types to 35% of Delta inflow from February through June, and to 65% of Delta inflow from July through January. Calculations of Delta inflow vary depending on whether the SWP or CVP are making storage withdrawals for export.</p> <p><u>Note:</u> In addition to these changes, DWR/SWP and USBR/CVP permit terms are modified to allow coordinated operations in anticipation of reduced exports. SWP and CVP each must meet five conditions addressing (1) export</p>

<p>Required the closure of the Delta Cross Channel gates from January 1 to April 15 in all water year types whenever the daily Delta outflow index is greater than 12,000 cfs to minimize the cross-Delta movement of salmon.</p> <p>Required the closure of the Delta Cross Channel gates from April 16 to May 31 in all water year types whenever the daily Delta outflow index is greater than 12,000 cfs. Closure can persist for up to 20 days within that period, but no more than two out of four consecutive days (at the discretion of the California Department of Fish and Game upon 12 hours notice) to minimize the diversion of young striped bass into the Central Delta.</p>	<p>limitations under coordinated operations; (2) fulfillment of other permit conditions; (3) providing offsetting decreases in diversions to compensate for increases in diversions in a 6-month period; (4) avoiding adverse impacts on legal users or on fish and wildlife or water quality; and (5) pumping limitations. (See Appendix C -Order 95-6)</p> <p>Delta Cross Channel Gates Closure</p> <p>Requires the gates to be closed in all water year types from November through January for a total of 45 days, and from February through May 20 for the protection of fish.</p> <p>Requires gate closure from May 21 through June 15 in all water year types for a total of 14 days. Timing and duration of closure to be determined by the Framework Agreement operations group.</p>
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Attachment 1. Bay-Delta Accord (Order 95-6) Changes to Water Rights Decision-1422	
D-1422 Conditions	Changes Made by Order 95-6
<p>Condition 5.</p> <p>Releases of conserved water from New Melones Reservoir for water quality control purposes shall be scheduled so as to maintain a mean monthly total dissolved solids concentration in the San Joaquin River at Vernalis of 500 parts per million or less and a dissolved oxygen concentration in the Stanislaus River as specified in the Water Quality Control Plan (Interim) , San Joaquin River Basin 5C, State Water Resources Control Board, June 1971.</p>	<p>Condition 5.</p> <p>Releases of conserved water from New Melones Reservoir for water quality control purposes shall be scheduled so as to maintain a maximum 30-day running average of mean daily electrical conductivity in the San Joaquin River at Vernalis of 0.7 mmhos/cm during April through August and a 1.0 mmhos/cm during September through March as specified in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and a dissolved oxygen concentration in the Stanislaus River of no less than 7.0 mg/l at any time and no less than a monthly mean daily DO of: 85% saturation in the main water mass, 75% saturation for the 95 percentile concentration as specified in the Water Quality Plan, San Joaquin River Basin 5C.</p>

Attachment 2

The reasonable and prudent alternative for the Delta Smelt. Opinion (December 14, 1993) states that:

"CVP/SWP shall implement and comply with the following operational criteria during Water Year 1994 starting on February 15, 1994, and ending February 15, 1995, in a manner that does not conflict with the flow and temperature requirements of [the National Marine Fisheries Service's] NMFS' 1993 winter-run chinook salmon biological opinion and is based on a 90% exceedance forecast:

(1) Transport and Habitat Flows

Reclamation/DWR will ensure that transport and habitat flows place the 2 [parts per thousand] isohaline downstream of Collinsville from February 1 through June 30. In addition, these flows will include a Sacramento River (measured at Freeport) and San Joaquin River (measured at Vernalis) flow component that will vary according to water-year type as calculated by the San Joaquin River Index. In a wet year, the ratio of Sacramento to San Joaquin River flows will be at least 5:1; in an above normal year, 3:1, in a below normal year, 6:1, in a dry year, 7:1, and in a critical year, 11:1. These required ratios are based on historical data for the years 1973 to 1993 for flows in water-year types calculated by the 40:30:30 index on the Sacramento River and the 60:20:20 index on the San Joaquin River. A minimum 1,500 cfs Vernalis flow shall be provided independent of Sacramento River flow. Note: The 40:30:30 index describes water availability on the Sacramento River side estimated in February. It is the sum of rainfall from October through March (30 percent), plus 40 percent of April through July. The San Joaquin River side has a similar index where each of the above 40:30:30 proportions are replaced with the values 60:20:20.

Delta outflows, as estimated at Mallard Slough, will be calculated using a 14-day running average. A sliding scale is currently being developed to allow a smooth transition of outflow requirements between water-year types. If deemed acceptable by the Working Group, it will be incorporated into the final version of this biological opinion. The number of days required below need not be consecutive, but must be within the February 1 to June 30 interval.

Reclamation/DWR shall provide minimum of 6,800 cfs and 12,000 cfs outflow for the number of days listed in Table 1, from February 1 through June 30:

If monitoring indicates that the flows specified above are not sufficient to transport delta smelt away from the southern and central delta and into adequate rearing habitat, then: the Working Group will convene and recommend to project operators any actions that may be appropriate to protect

delta smelt larvae and juveniles. Based on these recommendations, Reclamation and DWR will reinitiate section 7 consultation, if it is deemed necessary."

Table 1. Minimum number of days that
net Delta outflows of 6,800 cfs and 12,000 cfs
must be provided

<u>OUTFLOW/ WATER- YEAR TYPE</u>	<u>WET</u>	<u>ABOVE NORMAL</u>	<u>BELOW NORMAL</u>	<u>DRY</u>	<u>CRITICAL DRY</u>
6,800 cfs	150 days	150 days	114 days	109 days	40 days
12,000 cfs	150 days	150 days	85 days	64 days	18 days

Note: based on Delta outflow from DWR's DAYFLOW for 1955-1991

Attachment 3

CONDITIONS OF THE WINTER RUN CHINOOK SALMON OPINION

1. The Bureau must make its February 15 forecast of deliverable water based on estimates of precipitation and runoff at least as conservatively as 90 percent probability of exceedance. Subsequent updates of water delivery commitments must be based on at least as conservatively as a 90 percent probability of exceedance forecast.
2. The Bureau must maintain a minimum end-of-water-year (September 30) carryover storage in Shasta Reservoir of 1.9 million acre-feet.
3. The Bureau must maintain a minimum flow of 3,250 cfs from Keswick Dam to the Sacramento River from October 1 through March 31.
4. When reductions in releases through Keswick Dam to the Sacramento River are required from July 1 through March 31, the Bureau must reduce flows at night (from sunset to sunrise) as follows:
 - a) For reduction of Keswick Dam releases down to a level of 6,000 cfs, flows must not be decreased more than 15 percent each night. Flows must not be decreased more than 2.5 percent in a one-hour period.
 - b) For reduction of Keswick Dam releases to levels between 5,999 cfs and 4,000 cfs, flows must not be decreased by more than 200 cfs each night. Flows must not be decreased more than 100 cfs in a one-hour period.
 - c) For reduction of Keswick Dam releases to levels between 3,999 cfs and 3,250 cfs, flows must not be decreased by more than 100 cfs each night.
5. The Bureau must maintain daily average water temperature in the Sacramento River at no more than 56° F within the winter-run chinook salmon spawning grounds below Keswick Dam as follows:
 - a) Not in excess of 56 F at Bend Bridge from April 15 through September 30, and not in excess of 60 F at Bend Bridge from October 1 through October 31 for operational environments W-HI, W-HM, W-LM, W-LO, A-HI, A-HM, A-LM, A-LO, and D-HI.
 - b) Not in excess of 56 F at Bend Bridge from April 15 through August 31, and not in excess of 56 F at Jelly's Ferry from September 1 through September 30, and not in excess of 60 F at Jelly's Ferry from October 1 through October 31 for operational environment D-HM.

- c) Not in excess of 56 F at Jelly's Ferry from April 15 through September 30, and not in excess of 60 F at Jelly's Ferry from October 1 through October 31 for operational environments D-LM, D-LO, C-HI, C-HM, C-LM, and E-HI.
- d) The Bureau must reinitiate consultation 14 days prior to the first announcement of water delivery allocations for operational environments C-LO, E-HM, E-LM, and E-LO.

The February 90-percent exceedance forecast of runoff, or an exceedance forecast at least as conservative, must be used to determine the operational environment and associated temperature compliance points. Any modifications to the February water allocation must comply with the above requirements.

- 6. Pursuant to the following schedule, the gates of Red Bluff Diversion Dam must remain in the raised position to provide unimpeded upstream and downstream passage for winter-run chinook salmon:
 - a) The gates of Red Bluff Diversion Dam must remain in the raised position through at least April 30, 1993.
 - b) The gates of Red Bluff Diversion Dam must be raised on November 1, 1993 and remain in the raised position through at least April 30, 1994.
 - c) On September 15 of each year commencing in 1994, the gates of Red Bluff Diversion Dam must be raised and remain in the raised position from September 15 through at least May 14.

NMFS will review proposals for intermittent gate closures of up to 10 days one time per year on a case-by-case basis.

- 7. The Bureau must maintain the Delta Cross Channel Gates in the closed position from February 1 through April 30 to reduce the diversion of juvenile winter-run chinook salmon emigrants into the Delta.
- 8. Based on the observations of a real-time monitoring program in the lower Sacramento River, the Bureau must operate the gates of the Delta Cross Channel during the period of October 1 through January 31 to minimize the diversion of juvenile winter-run chinook salmon into the central Delta. The Bureau must develop the real-time monitoring program and fisheries criteria for gate closures and openings in coordination with the NMFS, USFWS, California Department of Fish and Game, and the California Department of Water Resources by August 1,

1993. The Bureau must ensure that continuous real-time monitoring is conducted between October 1 and January 31 of each year commencing in 1993.
9. Based on the 14-day running average of QWEST in cfs, the Bureau and the California Department of Water Resources must operate the Delta water export facilities to achieve no reverse flows in the western Delta from February 1 through April 30. The 7-day running average, if negative, must be within 1,000 cfs of the applicable 14-day running average during this period.
 10. Based on the 14-day running average of QWEST in cfs, the Bureau and the California Department of Water Resources must operate the Delta water export facilities to achieve flows in the western Delta greater than negative 2,000 cfs from November 1 through January 31. The 7-day running average, if negative, must be within 1,000 cfs of the applicable 14-day running average during this period.
 11. Continue and expand monitoring of winter-run chinook salmon in the lower Sacramento River and Sacramento-San Joaquin Delta to establish their presence, residence time, and serve as a basis for the real-time management of Delta Cross Channel gate operations.
 12. The Bureau in coordination with the Contra Costa Water District must develop and implement a program to monitor the entrainment loss of winter-run chinook salmon juveniles at the Rock Slough intake of the Contra Costa Canal.
 13. The Bureau and Department of Water Resources in cooperation with the California Department of Water Resources must monitor the extent of incidental take associated with the operation of the Tracy and Banks pumping facilities.